

USSN 10/024 518

C) Amend page 5, second full paragraph as follows:

A3 The bondcoat 24 may optionally be surface finished for the purpose of promoting adherence of the TBC 30 and layer 28 to bondcoat 24. An MCrAlY bondcoat may be surface finished as described in US Patent 4 321 310. A diffusion aluminide bondcoat may be surface finished by media bowl polishing as described in copending application Serial No. 09/511 857, now US Patent 6,472,018, of common assignee herewith, the teachings of which are incorporated herein by reference. Other suitable surface finishing techniques may be used to reduce the surface roughness of the bondcoat in practice of the invention.

D) Amend page 7, lines 1-9 as follows:

Am pursuant to the invention, or only one or more layers of the TBC can comprise a hafnia-bearing coating layer pursuant to the invention. Moreover, the morphology or structure of the TBC 30 can be controlled as taught in copending application entitled "THERMAL BARRIER COATING" (attorney docket No. MP293), US Serial No. 10/024,538, of common inventorship herewith, to further reduce thermal conductivity of TBC 30 by virtue of both its composition pursuant to this invention and its morphology. Layered or graded TBC coating structures also can be used to this end.

E) Amend page 7, last paragraph as follows:

AG  
The gas pressure in the coating chamber is controlled to produce a TBC coating having a conventional columnar coating structure comprising columnar grains C typically present for commonly used 7 weight % yttria stabilized zirconia deposited by EBPVD. For example, an oxygen pressure controlled at 6 microns plus or minus 2 microns can be used to this end. Alternately, a higher oxygen pressure of 20 microns plus or minus 2 microns can be used to produce a TBC coating structure comprising primary columnar grains that extend transversely of the surface of substrate 12 and that in addition have secondary columnar grains that extend laterally therefrom relative to a respective column axis as described in related copending application entitled "THERMAL BARRIER COATING", US Serial No. 10/024,538, of common inventorship herewith, the teachings of which are incorporated herein by reference. The morphology or microstructure of the TBC produced at the higher oxygen partial pressure exhibit reduced thermal conductivity as compared to a conventional thermal barrier coating having only columnar grains. Typical thickness of the conventional ceramic coating is in the range of 5 to 20 mils.